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FORM PTO-1390 U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NO. PHD 99,027
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S. Application No. (if known, see 37 CFR 1.5) 09/ 674 669
INTERNATIONAL APPLICATION NO. PCT/EP00/02178	INTERNATIONAL FILING DATE MARCH 11, 1999	PRIORITY DATE CLAIMED MARCH 11, 1999
TITLE OF INVENTION CHANGING GEAR		
APPLICANT(S) FOR DO/EO/US NORBERT KUNZE, STEFAN MULLER		
<p>Applicant(s) herewith submit to the United States Designated/Elected Office (DO/EO/US) the following items and other information:</p> <ol style="list-style-type: none"> <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). <input type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. <input type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c)(2)) <ol style="list-style-type: none"> <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> has been transmitted by the International Bureau. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)) <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) <ol style="list-style-type: none"> <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> have been transmitted by the International Bureau. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. <input type="checkbox"/> have not been made and will not be made. <input type="checkbox"/> A translation of the amendment to the claims under PCT Article 19 (35 U.S.C. 371 (c)(3)). <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). <p>Items 11. to 16. below concern document(s) or information included:</p> <ol style="list-style-type: none"> <input type="checkbox"/> An Information Disclosure Statement under 37 C.F.R. 1.97 and 1.98. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 C.F.R. 3.28 and 3.31 is included. <input checked="" type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND OR SUBSEQUENT preliminary amendment. <input type="checkbox"/> A substitute specification. <input checked="" type="checkbox"/> A change of power of attorney and/or address letter. <input checked="" type="checkbox"/> Other items or information: Application as published (WO00/54270) Four (4) sheets of formal drawings 		

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

NORBERT KUNZE ET AL

PHD 99,027

Int'l Application No.: IBPCT/EP00/02178

Filed: CONCURRENTLY

Title: CHANGING GEAR

Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to the national phase examination, please amend the
above-identified application as follows:

In the Specification

Page 1, above line 1, insert as a centered heading:

--BACKGROUND OF THE INVENTION--;

 above line 16, insert as a centered heading:

--SUMMARY OF THE INVENTION--;

Page 3, line 9, insert as a centered heading:

--BRIEF DESCRIPTION OF THE DRAWINGS--;

 line 16, insert as a centered heading:

--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--.

In The Claims

Claim 1, line 9, change "characterized in that" to --wherein--.

Claim 2, line 1, change "characterized in that" to --wherein--.

Claim 3, line 1, change "one of the claims 1 and 2, characterized in that" to --claim 1, wherein--.

Claim 4, line 1, change "any one of the claims 1 to 3, characterized in that" to --claim 1, wherein--.

Claim 5, line 2, change "characterized in that" to --wherein--.

In The Abstract

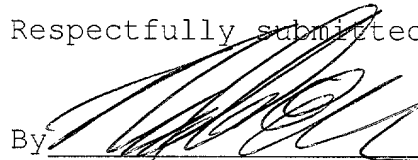
Page 7, last line, delete "Fig. 1".

Remarks

The specification and claims have been amended to correct informalities in language and grammar, to add headings in accordance with MPEP Section 601, and to delete multiple dependencies.

The above amendments are submitted to place this application in proper U.S. format. Entry of the amendment and an early action on the merits are solicited.

Respectfully submitted,



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Changing gear.

The invention relates to a device for playing and storing several disc-shaped data carriers with changing facility, in particular CDs, CD-ROMs, and DVDs, with a playback unit designed for playing the data carrier and consisting substantially of a base plate, a frame plate, and springs and dampers arranged therebetween, a turntable arranged on the frame plate and supporting the data carrier, and a tensioning device for the data carrier, with a stacking unit serving for the intermediate storage of several data carriers and a loading unit serving for the bidirectional transport of the data carrier between the stacking unit and the playback unit as well as for moving the data carrier into and out of the device.

The present state of the art provides that an individual motor is used for each of these mechanisms, or a changing gear is adjusted by hand or by means of a separate, small servomotor such that the motor power of a motor is switched over to various drives. The use of a separate drive motor or a servomotor is expensive, and a gear switch by hand is not always practicable or is at the very least uncomfortable. It happens in many technical appliances that several different mechanisms are used which must not be operated simultaneously.

It is an object of the invention to construct a drive system which controls itself without the help of servo drives such that the drive of two different mechanisms is rendered possible with only one motor.

The object according to the invention is achieved in that a changing gear is provided which has two alternate drive outputs, the first drive output being designed inter alia for the function of adjusting a control member which can be moved further from an extreme position of the first drive output by means of a further drive, with the result that an adjustment member carries out the switching-over operation.

The advantage lies in the fact that it is possible to control two drive outputs by means of only one motor drive via the changing gear, the switch-over between the two drive outputs taking place automatically by means of the adjustment member, and a manual operation is unnecessary.

In an embodiment of the device according to the invention, a changing wheel which is rotatably journaled about a drive wheel on a pivoting lever can be adjusted by means

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of an adjustment member which is kept in or brought into a first end position by a spring, as a result of which the first output side of the changing gear is in engagement.

Advantageously, the drive wheel and the changing wheel are thus in continuous contact, and a mechanically simple, slide-type adjustment member suffices for transmitting the drive force to the one drive output and to the other drive output alternately. The spring ensures in this case that the changing wheel is brought into the first end position and is retained there.

It is furthermore provided that the spring is constructed as a leg spring whose second leg is supported against a frame, whose turn or turns is/are supported on a mandrel of the adjustment member, and whose first leg in said first end position is also supported against the adjustment member, such that the spring force acts with displacement effect on the adjustment member from the second leg only, while the adjustment member for the purpose of coupling the second output side of the changing gear by means of a control element, which acts on the first leg of the spring and compensates the contact force thereof on the adjustment member, changes the balance of forces such that the spring force between the control element and the adjustment member becomes greater than the spring force on the second leg and the frame, with the result that the adjustment member moves towards the second end position until the second end position is reached, whereby the movement of the adjustment member is blocked, whereas the first leg of the spring is displaced further by the control element and is thus lifted at one point from the adjustment member.

The automatic switch-over from the first to the second operating mode takes place automatically owing to this advantageous embodiment. This automatic switch-over takes place exactly the moment the spring force between the control element and the adjustment member becomes greater than the force of the second spring leg exerted on the frame. The increase in the spring force between the control element and the adjustment member is achieved in a suitable manner through the movement of a component controlled by the first drive output side.

It is furthermore provided that the coupling region between the first output member and the control member is constructed such that the first output member and the control member can move relative to one another in the direction of movement of the control member, and this clearance space is utilized for coupling and uncoupling the first drive output side.

The coupling region as provided here has the advantage that a simple coupling and uncoupling of the first output can take place without a complicated coupling between the drive member and the first output being necessary.

It is provided in a further embodiment of the invention that a changing gear is fitted with the features according to the invention as mentioned above.

An embodiment of the invention will be explained in more detail below with reference to the drawings, in which:

Fig. 1 shows a changing gear in plan view;
Fig. 2 shows the changing gear in a further plan view;
Fig. 3 is a three-dimensional picture of the changing gear; and
Fig. 4 is a three-dimensional picture of a lever mechanism with a control element.

The operation of a changing gear according to the invention will be explained below. Fig. 1 shows the changing gear with a first output member 2, a second output member 1, a changing wheel 3, an adjustment member 4, and a control element 7 in a position in which the first output is driven. The changing wheel 3 is rotatably journaled on a pivot lever 5 and is in engagement with the rack 2 of the second output side. The pivot lever 5 can be pivoted by means of its catch pin 5a and the contour 4a of the adjustment member 4 when the adjustment member 4 is displaced against the direction of arrow A, so that the changing wheel 3 can be brought into engagement with the drive wheel 1 of the second output side.

This situation is visible in Fig. 2.

The first leg 6a of the spring 6 bears on the adjustment member 4 in point B, and the second leg 6b bears on the frame 10 in point C, so that the adjustment member 4 is forced in the direction of the arrow A. The turn of the spring 6 is retained on the adjustment member 4 by a mandrel 8. The control element 14 lies in front of the first leg 6a of the spring. The control element 14 is coupled to the rack 2 by means of its dog 14a which lies in a rack opening 2a. In this switching position of the changing gear, a displacement of the rack 2 in a direction opposed to the arrow A has the result that the control element 14 will follow this movement, so that the edge D thereof approaches the first leg 6a and finally touches it. This is the extreme position up to which the rack 2 in its function as an output member can be

displaced. A further displacement of the control element 14 in a direction opposite to the arrow A is only possible if the width of the rack opening 2a of the rack 2 is greater than the width of the dog 14a, since a displacement of the rack 2 with the changing wheel 3 coupled thereto is not possible. Fig. 3 accordingly shows the changing gear in the first output position with the control element 14 and the dog 14a thereof coupled to the first output member 2, i.e. in the rack opening 2a thereof.

The displacement of the control element 14 against the arrow A has the result that the edge D of the element will occupy a position between the turn of the spring 6 and the point C on the first leg 6a of the spring. Since the effective lever arms on the spring legs 6a and 6b are of different lengths, the force between the control element 14 and the first leg 6a of the spring 6 is greater than the force between the second leg 6b and the frame point C. When the control element 14 is moved further, the turn of the spring 6, and accordingly also the adjustment member 4, will follow the movement of the control element 14 until the movement of the adjustment member 4 is stopped by an abutment. When the control element 14 moves still further after that, the first leg 6a will lift itself off its contact point B on the adjustment member 4 and will bear on the abutment with prestress. The switch-over process from the first output to the second output is completed thereby. Fig. 4 separately shows the lever mechanism with the control element 14, which is coupled by its dog 14a into the first output member 2 (not shown), and with a component of the third mechanism 5, by means of whose carrier block T2 the control element 14 can be operated by its catch T1 for switching the changing gear over.

CLAIMS:

1. A device for playing and storing several disc-shaped data carriers with changing facility, in particular CDs, CD-ROMs, and DVDs, with a playback unit designed for playing the data carrier and consisting substantially of a base plate, a frame plate, and springs and dampers arranged therebetween, a turntable arranged on the frame plate and supporting the data carrier, and a tensioning device for the data carrier, with a stacking unit serving for the intermediate storage of several data carriers and a loading unit serving for the bidirectional transport of the data carrier between the stacking unit and the playback unit as well as for moving the data carrier into and out of the device, characterized in that a changing gear is provided which has two alternate drive outputs, the first drive output (2) being designed inter alia for the function of adjusting a control member (14) which can be moved further from an extreme position of the first drive output (2) by means of a further drive, with the result that an adjustment member (4) carries out the switching-over operation.

2. A device as claimed in claim 1, characterized in that a changing wheel (3) which is rotatably journaled about a drive wheel (9) on a pivoting lever (5) can be adjusted by means of an adjustment member (4) which is kept in or brought into a first end position by a spring (6), as a result of which the first output side (2) of the changing gear is in engagement.

3. A device as claimed in one of the claims 1 and 2, characterized in that the spring (6) is constructed as a leg spring whose second leg (6b) is supported against a frame (10), whose turn or turns is/are supported on a mandrel (8) of the adjustment member (4), and whose first leg (6a) in said first end position is also supported against the adjustment member (4), such that the spring force acts with displacement effect on the adjustment member (4) from the second leg (6b) only, while the adjustment member (4) for the purpose of coupling the second output side of the changing gear by means of a control element (14), which acts on the first leg (6a) of the spring (6) and compensates the contact force thereof on the adjustment member (4), changes the balance of forces such that the spring force between the

control element (14) and the adjustment member (4) becomes greater than the spring force on the second leg (6b) and the frame (10), with the result that the adjustment member (4) moves towards the second end position until the second end position is reached, whereby the movement of the adjustment member (4) is blocked, whereas the first leg (6a) of the spring (6) is displaced further by the control element (14) and is thus lifted off the adjustment member (4) at point B.

4. A device as claimed in any one of the claims 1 to 3, characterized in that the coupling region between the first output member (2) and the control member (14) is constructed such that the first output member (2) and the control member (14) can move relative to one another in the direction of movement of the control member (14), and the resulting clearance space is utilized for coupling and uncoupling the first drive output side (2).

5. A changing gear, in particular for a device for playing and storing several disc-shaped data carriers, characterized in that said changing gear has two alternate drive outputs, the first drive output (2) being designed inter alia for the function of adjusting a control member (14) which can be moved further from an extreme position of the first drive output (2) by means of a further drive, with the result that an adjustment member (4) carries out the switching-over operation.

ABSTRACT:

The invention relates to a device for playing and storing several disc-shaped data carriers for alternate operation, in particular CDs, CD-ROMs, and DVDs, with a playback unit serving for playing the data carrier and comprising substantially a base plate, a frame plate, and springs and dampers arranged therebetween, and a turntable arranged on the frame plate for accommodating the data carrier and a tensioning device for the data carrier, as well as a stacking unit for the intermediate storage of several data carriers and a loading unit for the bidirectional transport of the data carrier between the stacking unit and the playback unit and for moving the data carrier into and out of the device. A changing gear is provided which has two alternative outputs, the first output (2) being provided inter alia for the purpose of adjusting a control member (14) which can be displaced from an extreme position of the first output (2) by means of a further drive, such that an adjustment member (4) carries out the switching-over operation.

Fig. 1



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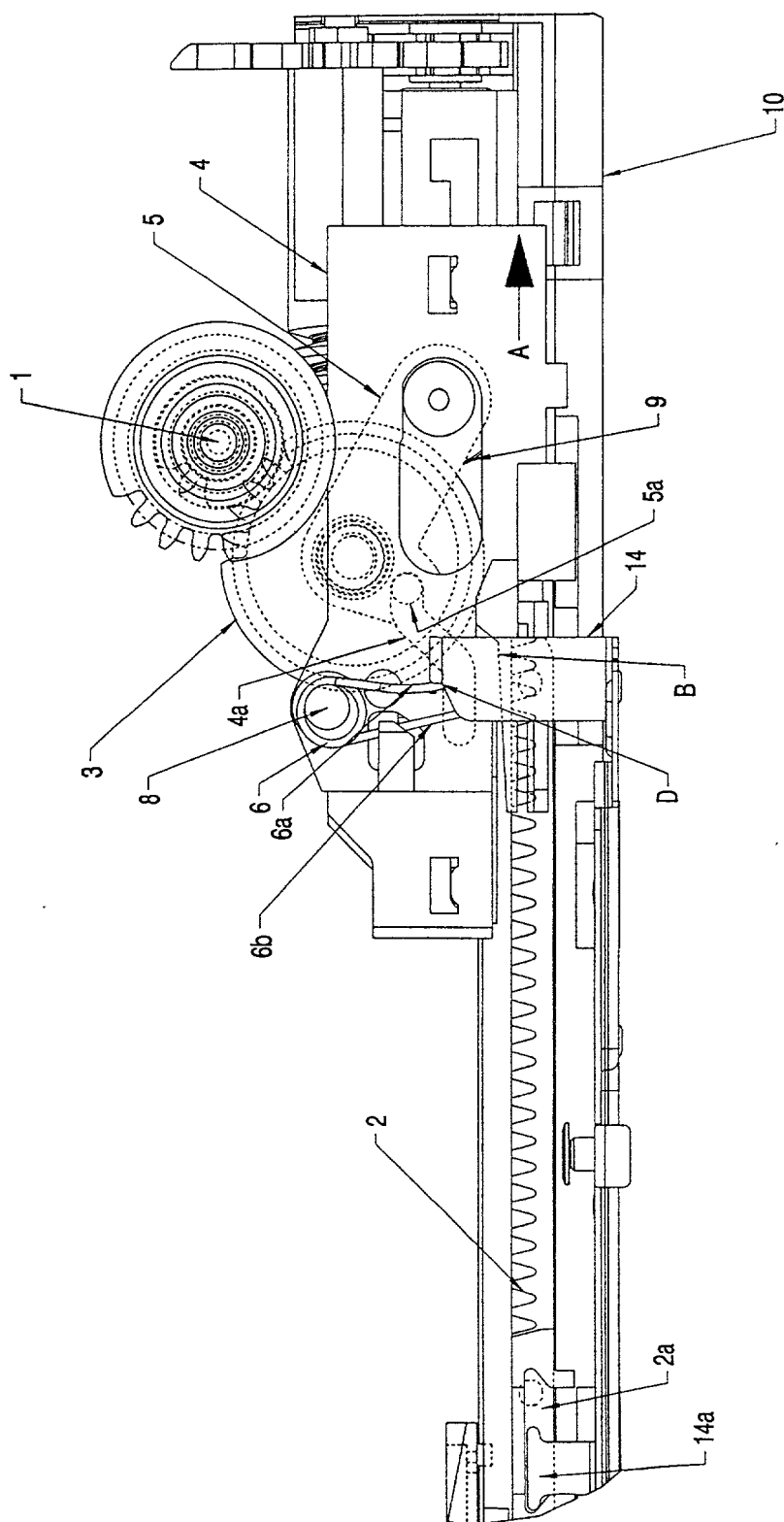


FIG. 2

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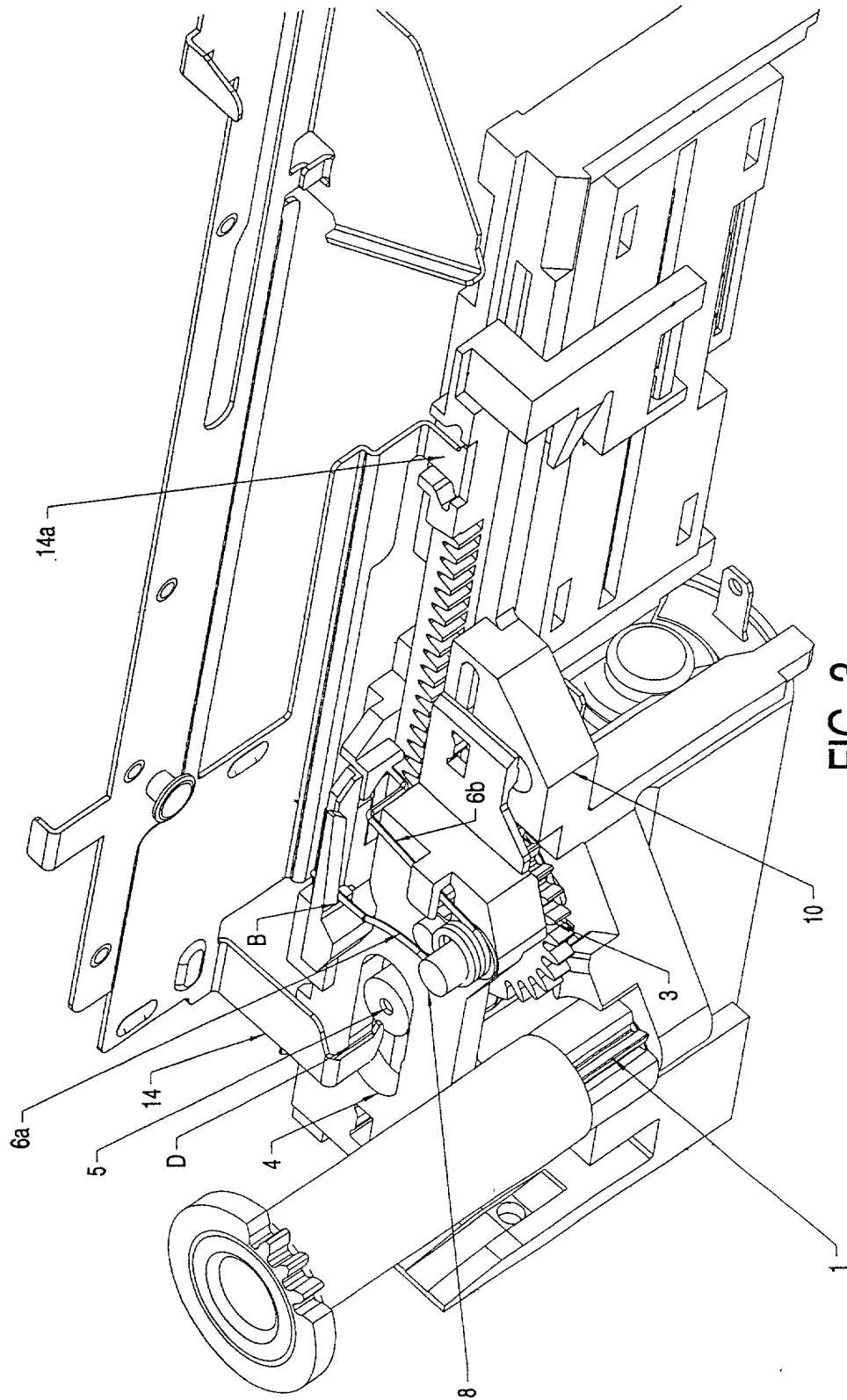
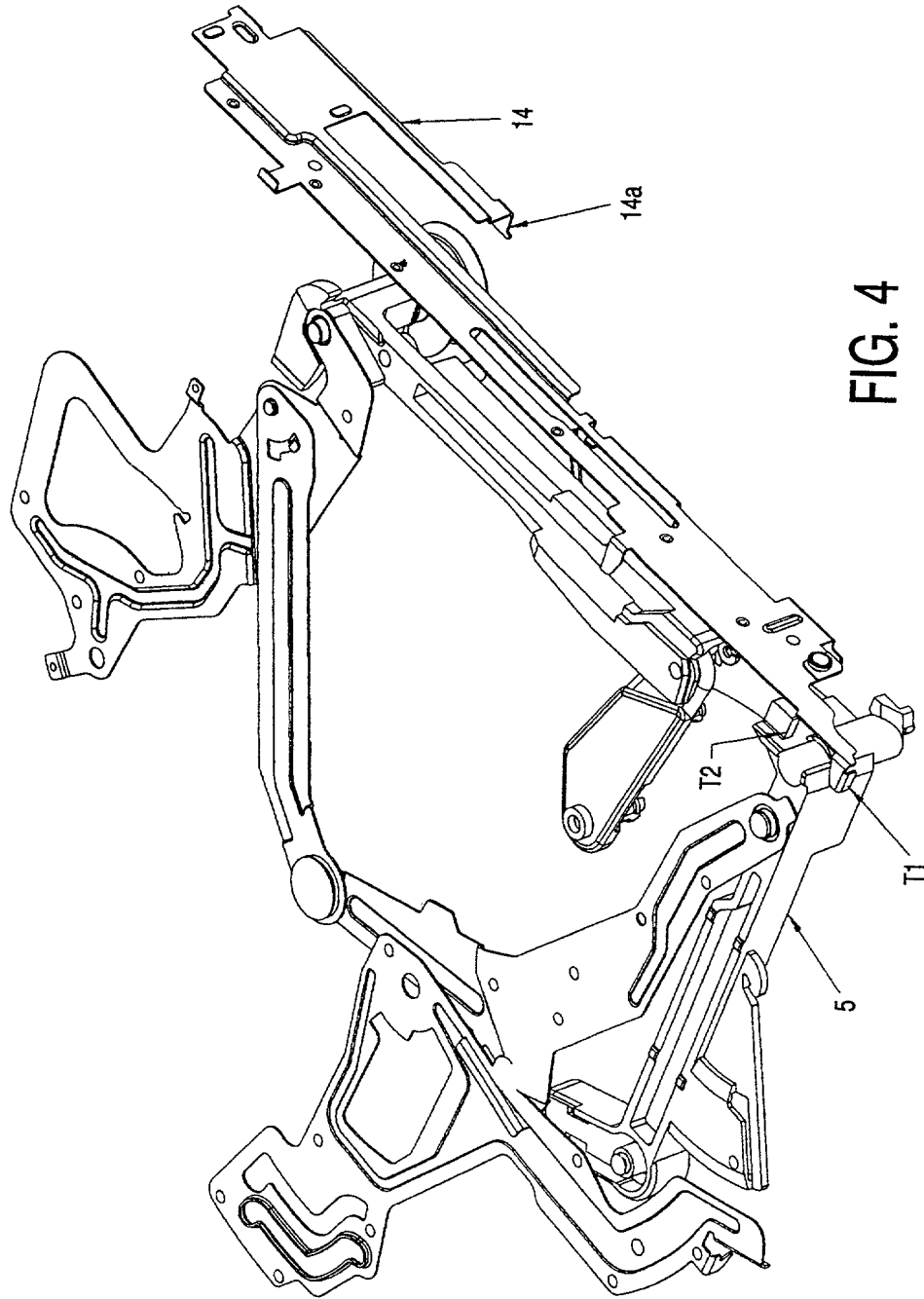


FIG. 3



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Combined Declaration For Patent Application and Power of Attorney (Continued) (includes Reference to PCT International Applications)		Attorneys Docket Number PHD 99.027 US
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (List name and registration number)		
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	POST OFFICE ADDRESS	POST OFFICE ADDRESS	CITY	STATE & ZIP CODE/COUNTRY

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201 	SIGNATURE OF INVENTOR 202 	SIGNATURE OF INVENTOR 203
DATE 29 September 2000	DATE 29 September 2000	DATE
SIGNATURE OF INVENTOR 204	SIGNATURE OF INVENTOR 205	SIGNATURE OF INVENTOR 206
DATE	DATE	DATE

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: **"Changing gear"**

the specification of which (check only one item below):

☐ is attached hereto.

☐ was filed as United States application

Serial No _____

on _____

and was amended

on _____

☒ was filed as PCT international application

Number PCT/EP00/02178

on 10 March 2000

and was amended under PCT Article 19

on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

PRIOR FOREIGN/PCT APPLICATION(S) AND ANY PRIORITY CLAIMS UNDER 35 U.S.C. 119:

COUNTRY	APPLICATION NUMBER	DATE OF FILING DAY, MONTH, YEAR	PRIORITY CLAIMED UNDER 35 USC 119
Germany	19910670.3	11 March 1999	YES

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(July 1994)